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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,534	04/15/2008	Fredrik Adilstam	NOBELB.230NP	5459

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KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

SELLMAN, CACHET I

ART UNIT	PAPER NUMBER
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1715

NOTIFICATION DATE	DELIVERY MODE
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11/14/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
efiling@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No.	Applicant(s)	
	10/573,534	ADILSTAM ET AL.	
	Examiner	Art Unit	
	CACHET SELLMAN	1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-13 is/are pending in the application.
- 5a) Of the above claim(s) 12 and 13 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-11 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1, 3, 6, 7, and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima et al. (US 4983182) and Bryan et al. (US 4073999).

As to claim 1, Kijima et al. discloses a process for providing a porous layer of alpha-tricalcium phosphate and zirconia onto a ceramic substrate made of zirconia where the substrate is an implant material for the living body such as an artificial tooth root (see col. 1, lines 5-27). The ceramic layer having a porosity is formed on the surface by applying a dispersion with a viscous liquid (water), to the surface and sintering the dispersion to form a ceramic layer where the intermediate spaces are formed by driving off the water and the dispersant (see Example 12).

Kijima et al. fail to state that the ceramic substrate has a first porosity or that the porosity of the ceramic layer has larger pores than the first porosity found on the ceramic substrate. However, Kijima et al. teaches the water in the slurry is absorbed into the ceramic substrate while the particles remain on the surface to form the porous ceramic layer (see col. 5, lines 26-35) therefore the material particles has a size which does not penetrate the first pore formation and contribute to the formation of the ceramic layer. The definition of absorb is to take something in through pores or interstices, therefore the ceramic substrate must have some degree of porosity in order for the slurry to be absorbed.

As to the second porosity having larger pores than the ceramic substrate limitation, Kijima et al. states the importance of having a more porous ceramic layer because it affects the biological activity of the layer as well as crack formation in the layer (see col. 5, lines 5-21). Bryan et al. discloses forming a porous ceramic coating where the porosity is dependent upon the particle size. Bryan et al. states porosity tends decrease with decreasing particle size (see col. 3, lines 26-37) which means larger particle size results in an increase of porosity. Therefore it would have been obvious to one having ordinary skill in the art through routine experimentation to provide the ceramic layer with larger particles in order to form a more porous ceramic layer than the ceramic substrate. One would have been motivated to do so since Kijima et al. teaches the porosity provides greater biological activity and prevents cracking and delaminating of the layer from the substrate and Bryan et al. further teaches that the larger pores results in a more porous coating.

As to claims 3 and 6, the ceramic substrate is pre-sintered (see Example 1) and zirconia and hydroxyapatite are mixed into the dispersion (see Example 12). Kijima et al. does not state the particle size of the ceramic material. However, it would have been obvious to one having ordinary skill in the art to use the claimed range through routine experimentation because it is stated that the powder size determine the porosity of the final layer which affects the bioactivity of the layer therefore in order to achieve the desired surface morphology in the dental implant.

As to claim 7, the thickness of the layer is varied since it contains pores meaning some areas of the layer is thicker than others due to the variation of the particles.

As to claim 10, the dispersion is applied by immersion (see col. 5, line 30).

As to claim 11, the dispersion comprises water (see Example 12).

2. Claims 2, 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima and Bryan et al. as applied to claim 1 above in view of Apte et al. (US 5902429).

The teachings of Kijima et al. as applied to claim 1 are as stated above.

Kijima et al. fails to teach the use of a pore former to form the pores in the ceramic layer as required by claim 2.

Apte et al. discloses in the art of forming ceramic layers that the inclusion of a pore former is beneficial in that it helps in controlling the pore size and porosity of the final product as well as contributes to forming uniformly distributed pores in the surface (see col. 9, lines 7-17 and claim 14). Apte et al. teaches the pore formers can be graphite or starch (see claim 14) and are driven off by the furnace.

It would have been obvious to one having ordinary skill in the art to modify the process of Kijima et al. to include a pore former as taught by Apte et al. in order to control further control the pore formation and provide uniformly distributed pores within the ceramic layer. Apte et al. does not state the particle size of the pore forming material. However, it would have been obvious to one having ordinary skill in the art to use the claimed range through routine experimentation because it is stated that the powder size determine the porosity of the final layer which affects the bioactivity of the layer therefore in order to achieve the desired surface morphology in the dental implant.

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As to claim 5, Kijima et al. teaches the dispersant can be an acrylic polymer (see col. 3, lines 44-57 of Kijima) and in combination with Apte et al. teaches using a pore former which can be driven off.

As to claim 8, Apte et al. teaches various pore formers that can be used (see claim 14), it would have been obvious to one having ordinary skill in the art to use different pore formers depending on the desired porosity of the ceramic layer in order to effectively promote bioactivity.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima and Bryan et al. as applied to claim 1 and in further view of Stucki-McCormick (US 5961329).

The teachings of Kijima as modified by Bryan et al. are as stated above. Kijima teaches the substrate is an artificial tooth root but fails to teach the substrate has a thread as required by claim 9.

Stucki-McCormick teaches that a dental implant which replaces the root of a tooth can have threads in addition to a surface coating which promotes bone growth which facilitate placement and promote bone healing thus increasing the retention of the implant within the bone (see col. 6, lines 42-51 and 61-66). It would have been obvious to one having ordinary skill in the art to use an artificial tooth root having a threaded portion as taught by Stucki-McCormick in addition to the porous ceramic coating in the process of Kijima. One would have been motivated to do so in order to facilitate placement and promote bone healing which increases retention of the implant within the bone.

As to the limitation of the thickness of the layer changes along the extent of the thread between the internal and external diameters, since the layer contains pores some of the areas of the layer will be thicker than others.

Response to Arguments

4. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CACHET SELLMAN whose telephone number is (571)272-0691. The examiner can normally be reached on Monday through Friday, 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cachet I Sellman
Examiner
Art Unit 1715

/C. S./
Examiner, Art Unit 1715

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1715